

SECTION 26 24 13
DISTRIBUTION SWITCHBOARDS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the furnishing, installation, connection, and testing of the low-voltage circuit-breaker distribution switchboards, indicated as switchboard in this section.

1.2 RELATED WORK

- A. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS:
Requirements that apply to all sections of Division 26.
- B. Section 26 05 19, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES:
Low-voltage conductors.
- C. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS:
Requirements for personnel safety and to provide a low impedance path for possible fault currents.
- D. Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: Conduit.

1.3 QUALITY ASSURANCE

- A. Refer to Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES), in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 FACTORY TESTS

- A. The following additional tests shall be performed:
1. Verify that circuit breaker sizes and types correspond to drawings, and the Overcurrent Protective Device Coordination Study.
 2. Verify tightness of bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.
 3. Exercise all active components.
- B. Furnish four (4) copies of certified manufacturer's factory test reports prior to shipment of the switchboards to ensure that the switchboards have been successfully tested as specified.

1.5 SUBMITTALS

- A. Submit six copies of the following in accordance with Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1. Shop Drawings:
 - a. Submit sufficient information to demonstrate compliance with drawings and specifications.
 - b. Submit the following data for approval:
 - 1) Complete electrical ratings.
 - 2) Circuit breaker sizes.
 - 3) Interrupting ratings.
 - 4) Accessories and nameplate data.
 - 5) Technical data for each component.
 - 6) Provisions and required locations for external conduit and wiring entrances.
2. Manuals:
 - a. Submit, simultaneously with the shop drawings, companion copies of complete maintenance and operating manuals, including technical data sheets, wiring diagrams, and information for ordering replacement parts.
 - 1) Include information for testing, repair, trouble shooting, assembly, disassembly, and factory recommended/required periodic maintenance procedures and frequency.
 - 2) Provide a replacement and spare parts list. Include a list of tools and instruments for testing and maintenance purposes.
 - b. If changes have been made to the maintenance and operating manuals originally submitted, submit updated maintenance and operating manuals two weeks prior to the final inspection.
3. Certifications: Two weeks prior to final inspection, submit the following.
 - a. Certification by the manufacturer that the breakers conform to the requirements of the drawings and specifications.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.
- B. Institute of Engineering and Electronic Engineers (IEEE):

C37.13-08.....Low Voltage AC Power Circuit Breakers Used in Enclosures

- C62.41.1-03.....Surge Environment in Low-voltage (1000V and less) AC Power Circuits
- C62.45-92.....Surge Testing for Equipment connected to Low-Voltage AC Power Circuits
- C. International Code Council (ICC):
 - IBC-12.....International Building Code
- D. National Electrical Manufacturer's Association (NEMA):
 - PB-2-06.....Deadfront Distribution Switchboards
 - PB-2.1-07.....Proper Handling, Installation, Operation, and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less
- E. National Fire Protection Association (NFPA):
 - 70-11.....National Electrical Code (NEC)
- F. Underwriters Laboratories, Inc. (UL):
 - 489-09.....Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures

PART 2 - PRODUCTS

2.1 GENERAL

- A. Shall be in accordance with ANSI, IEEE, NEMA, NFPA, UL, as shown on the drawings, and have the following features:
 - 1. Incorporate devices shown on the drawings and all related components required to fulfill operational and functional requirements.
 - 2. Ratings shall not be less than shown on the drawings. Short circuit ratings shall not be less than the available fault current shown in the Overcurrent Protective Device Coordination Study.

2.2 FEEDER CIRCUIT BREAKERS

- A. Provide molded case circuit breakers as shown on the drawings.
- B. Adjustable Trip Molded Case Circuit Breakers:
 - 1. Provide molded case, solid state adjustable trip type circuit breakers.
 - 2. Trip units shall have field adjustable tripping characteristics as follows:
 - a. Long time pickup.
 - b. Long time delay.
 - c. Short time pickup.
 - d. Short time delay.
 - e. Instantaneous.

- f. Ground fault pickup.
- g. Ground fault delay.

2.3 OTHER EQUIPMENT

- A. Furnish tools and accessories required for circuit breaker and switchboard test, inspection, maintenance, and proper operation.

PART 3 - EXECUTION

3.1 ACCEPTANCE CHECKS AND TESTS

- A. Perform in accordance with the manufacturer's recommendations. In addition, include the following:
 - 1. Visual Inspection and Tests:
 - a. Inspect physical, electrical, and mechanical condition.
 - b. Verify that circuit breaker sizes and types correspond to approved shop drawings.
 - c. Verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey after energization.
 - g. Vacuum-clean switchboard enclosure interior. Clean switchboard enclosure exterior.
 - j. Exercise all active components.
 - k. Verify the correct operation of all sensing devices, alarms, and indicating devices.
 - l. Verify that vents are clear.

3.2 FOLLOW-UP VERIFICATION

- A. Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that the switchboard is in good operating condition and properly performing the intended function.

3.3 ONE LINE DIAGRAM AND SEQUENCE OF OPERATION

- A. At final inspection, an as-built one line diagram shall be laminated or mounted under acrylic glass, and installed in a frame mounted in the switchboard room or in the outdoor switchboard enclosure.
- B. Deliver an additional four copies of the as-built one line diagram Contracting Officer Representative.

3.4 AS-LEFT TRIP UNIT SETTINGS

- A. The trip unit settings shall be set in the field by an authorized representative of the switchboard manufacturer.
- C. Post a durable copy of the "as-left" trip unit settings in a convenient location in the switchboard room. Deliver four additional copies of the settings to the Contracting Officer Representative. Furnish this information prior to the activation of the switchboard.

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